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**Surface Acoustic Wave Device Having Improved Performance  
and Method of Making the Device**

Substitute Technical Field

Spec.

MR<sup>2</sup>

7-20-02

The present invention relates to surface acoustic wave (SAW) devices.

Specifically, the present invention relates to SAW devices fabricated to have high-power metallization systems. In one particular application, the present invention relates to such high power SAW devices utilized as filters within antenna duplexers.

**Background of the Invention**

A surface acoustic wave (SAW) device is an electro-mechanical conversion element that utilizes a surface wave propagating across a surface of body to convey energy between electrodes of an inter-digital transducer. When an electric signal is supplied to one of the electrodes, the body is stressed, and the stress becomes a surface acoustic wave. The wave propagates on the body and causes generation of an electric signal at the other transducer.

SAW devices are utilized in a wide range of applications. One example application is as a filter adapted for high energy transmission. Another example application is as a resonator in which a surface wave of large amplitude is present as a standing wave.

Current SAW devices may develop issues concerning hillocks, voids, or the like due to metal migration that takes place within aluminum metallized electrodes. The migration is due primarily to the induced stress. Such issues may readily occur for a SAW device that has very fine inter-digit fingers that provide the electrode transducer. Under such circumstances, the SAW device may experience deviation or shift away from desired frequency performance.